

Title: Catheter for insertion into the human body

Technical Field

- 5 The invention relates to a catheter for insertion into the human body and which includes one or more optionally scanning ultrasonic transducers as well as a surgical instrument to be operated from the outside.

Background Art

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Many catheters are known for insertion into the human body in order to extract tissue samples. Many of these known catheters are encumbered with the drawback that they are difficult to clean and disinfect upon use.

- 15 According to Danish Patent Application No. 12/98 attempts have been made at solving this problem by forming the needle guide separately relative to the remaining part of the catheter which has been coated with a sterile sheath. Then the needle guide is secured to the remaining part of the catheter on the outer side of the sheath in such a manner that the needle need not penetrate said sheath during a sampling.
- 20 As a result it is not necessary to disinfect the catheter upon use. However, great interest attaches in avoiding such a sheath.

Disclosure of Invention

- 25 The object of the invention is therefore to provide a catheter of the above type which is easier to disinfect than hitherto known and which therefore does not need such a sheath.

- A catheter of the above type is according to the invention characterised in that it includes one or more parts of a substantially completely circular or partially circular
- 30 cross section, where a rod is inserted between said parts and at the end is provided

with an ultrasonic transducer, said completely or partially circular parts being surrounded by an outer tube passed over the completely or partially circular parts, and where the surface of at least one of the completely or partially circular parts is provided with a longitudinal groove for the insertion of the surgical instrument.

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As a result, the catheter includes only very few parts which in the separated state are easy to clean and disinfect.

Moreover, the surgical instrument may according to the invention be formed by a flexible needle for the insertion of a substance or for the extraction of tissue samples.

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In addition, the longitudinal groove in the surface of the circular part may according to the invention be longer than the surrounding outer tube.

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Furthermore, the longitudinal groove in the surface of the circular part may according to the invention be formed such that the flexible needle is positioned immediately behind the outer tube, preferably by said groove in the surface of the circular part ending in the surface of said circular part immediately behind said outer surrounding tube.

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Brief Description of the Drawings

The invention is explained in detail below with reference to the drawings, in which

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FIG. 1 shows a catheter according to the invention which includes two parts of a semicircular cross section which are kept together by means of an outer tube,

FIG. 2 is a longitudinal sectional view from the outside of the two parts of a semicircular cross section,

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FIG. 3 shows the outer tube,

FIG. 4 shows a catheter housing a surgical instrument in form of a needle for the introduction of a substance or for the extraction of a tissue sample,

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FIG. 5 shows a sigmoidoscope, and

FIG. 6 shows a second embodiment of the catheter.

10 Best Mode for Carrying out the Invention

FIG. 1 shows a catheter according to the invention for insertion into the human body. The catheter includes one or more parts 2, 3 of a substantially completely or partially circular cross section, said parts preferably being two substantially semicircular parts. A rod 4 is inserted between these parts 2, 3, said rod being provided at the projecting end with an ultrasonic transducer 7. The rod 4 can be rotated relative to the two semicircular parts 2, 3. The two semicircular parts 2, 3 are kept together by means of an outer tube 5 passed over said two semicircular parts 2, 3. The abutting surfaces of the two semicircular parts are formed such that they lock relative to one another. A longitudinal groove 6 is provided in the surface of at least one semicircular part 2, said groove allowing the insertion of a surgical instrument, such as a flexible needle or a cannula 12 for a sampling or for the introduction of a substance. The groove 6 is longer than the outer tube 5 and shaped such that the cannula 12 is positioned so as to extend immediately behind the outer tube 5, said groove 6 ending in the surface of the circular part 2 immediately behind the outer tube 5. During the extraction of a tissue or liquid sample from the human body the cannula 12 can then be observed by means of the ultrasonic transducer 7 in form of the location where said cannula 12 passes the transverse plane being scanned by said transducer 7. The observation can for instance be displayed on a screen.

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The catheter is furthermore equipped with a valve 8 for the introduction of a liquid,

preferably brine. The brine exits at the opposite end where the needle 12 extends out of the catheter in such a manner that an acoustic impedance matching always applies to the tissue to be examined.

- 5 In addition, means 9 can be provided for fixing the rod 4 relative to the two semicircular parts 2, 3, as well as a screw 10 can be provided for securing the outer tube 5 relative to the semicircular parts 2, 3.

The catheter can for instance be used for rectal purposes, such as in connection with
10 rectoscopy.

The catheter is made of stainless steel and presents an outside diameter of approximately 6 to 24 mm.

- 15 The catheter can optionally be made of plastics or a combination of stainless steel and plastics.

In addition, the catheter is very user-friendly as well as easy to disassemble for disinfecting and sterilising purposes.

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Another embodiment, a so-called sigmoidoscope or a rectoscope, includes a plastic or steel tube, cf. FIG. 5. The plastic tube is then used as light conductor which renders it possible to introduce a telescope into the plastic tube which then exposes the surrounding tissue. It is possible to insert a cannula for a sampling in the rim of the
25 above plastic tube. The catheter according to the invention can optionally be inserted in the above plastic tube upon detection of the various internal organs by means of the telescope.

FIG. 6 shows another embodiment of the catheter, said embodiment being introduced into the sigmoidoscope shown in FIG. 5.
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